



Visualizing Data: Tableau 101

ECCCP Mini-Grant Support
February 20, 2019

Desired Outcomes

1

Participants gain insight on the what, why, and who of visualization in the context of data storytelling.

2

Participants apply learning to their own work via a community partner example.

3

Participants practice using Tableau as a tool for organizing and visualizing program and population level data.

Agenda

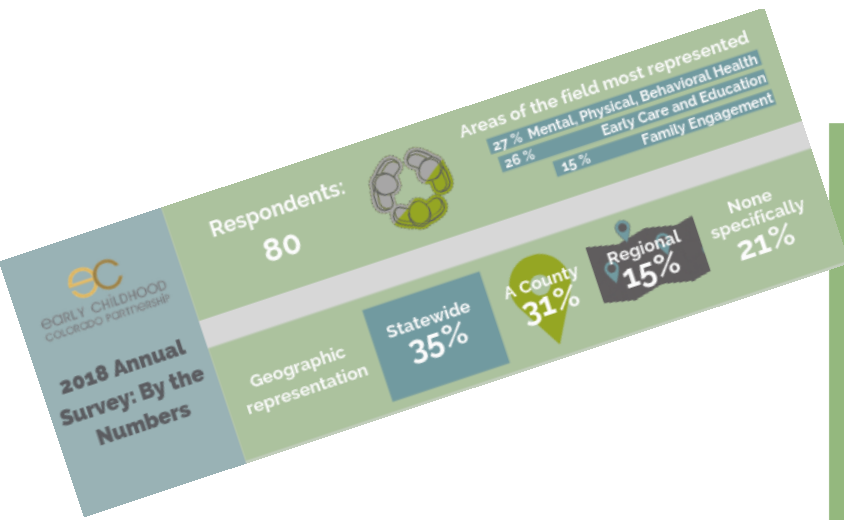
11:10-11:20	Why Data Visualization, Why Tableau? <i>Hanna Nichols</i>
11:20-11:35	Community Partner Story: Family Resource Center Association <i>Stuart Sims</i>
11:35-12:10	Getting started with Tableau <i>Phil Perrin</i> <ul style="list-style-type: none">• Getting access• Mindset shifts• Key definitions
12:10-12:30	Demonstration of Tableau <i>Phil Perrin</i>
12:30-12:45	Practice! <i>All Play</i>
12:45-12:55	Questions, Revisiting Concepts, Tools <ul style="list-style-type: none">• How are you feeling at this point? What are some initial reactions?

What, Why, and Who of Data Visualization?

What is Data Visualization?

- Representation of data in the form of charts, graphs, scatter plots, infographics, etc.
- More specifically for the purposes of groups like ours, the purpose of data visualization is to make data more accessible, meaningful, and actionable.

Data Visualization Matrix



EXPLAIN

Goal: Raise awareness, share learning, advocate

Visual Tools: Infographics, simple charts, images

Goal: Educating, building context, storytelling, advocate

Visual Tools: Charts, graphs, accompany with narrative and stories, infographics



SIMPLE

- Administrative tracking
- Survey feedback
- Customer/client data
- Qualitative data

Goal: Context-building, identifying next steps, planning, finding connections

Visual Tools: Charts and graphs

Goal: Making sense, identifying areas of importance, finding solutions

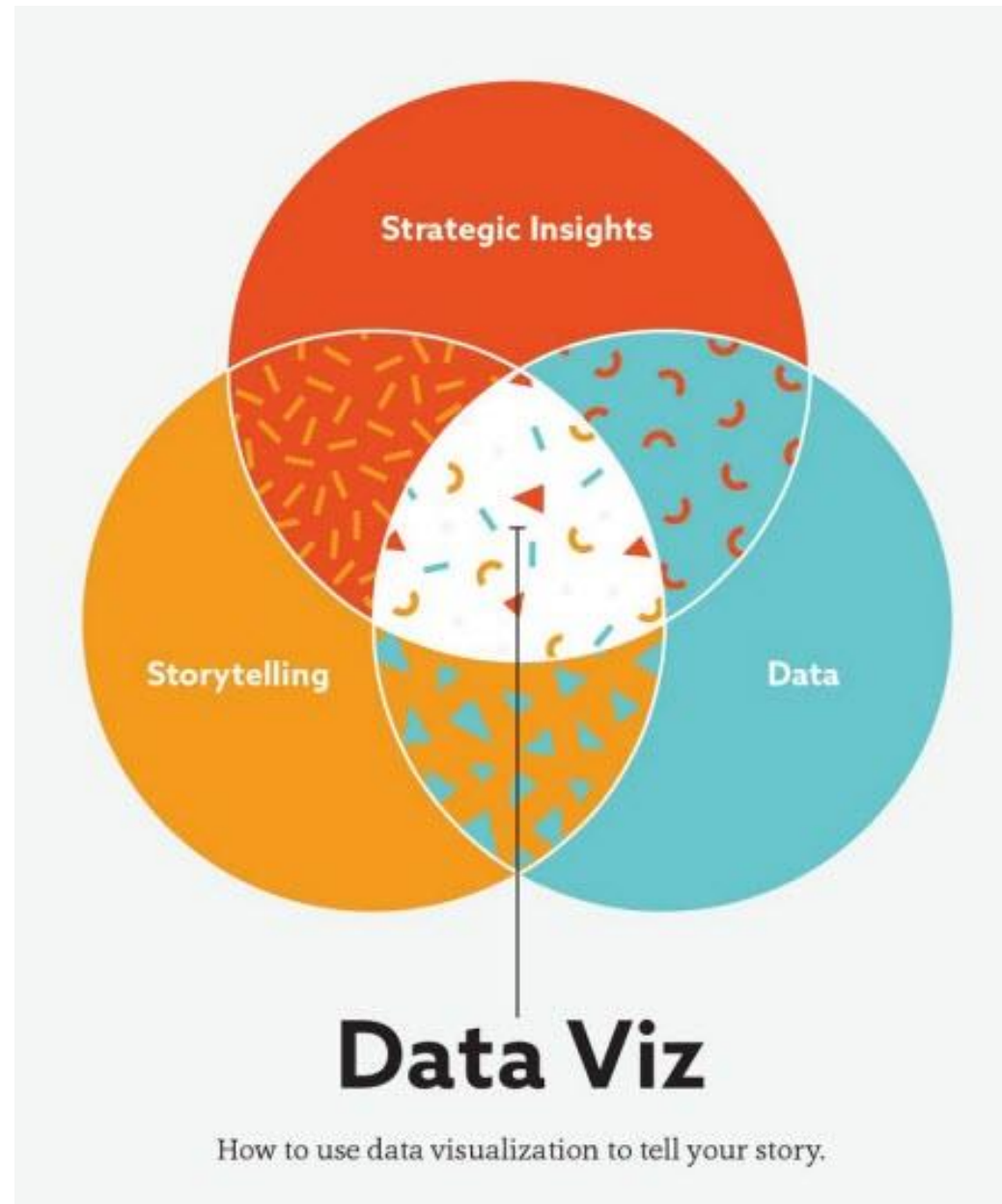
Visual Tools: Advanced data analysis and visualization, scatter plots, etc.

COMPLEX

- Longitudinal program/population data
- Quantitative data in large quantities

EXPLORE

Adapted from: Visual Learning Center



[Source: Beth Kanter](#)

Population vs. Performance Data

POPULATION

the well-being of
WHOLE Populations

For Communities – Cities – Counties – States - Nations

PERFORMANCE

the well-being of
CLIENT Populations

For Programs – Agencies – and Service Systems

Why Data Visualization?

Helping us to tell a stronger story

- Humans struggle to process information in linear, spreadsheet format
- Humans are driven by emotion before reason
- Data alone \neq impact



Getting creative with data can help us identify the story

- Seeing data in new and different ways can help us see what's important
- We can see the data in a more systemic context, whether it's population or program data

We can bring in new audiences and supporters

- When our audiences can better understand what is going on, the more they are likely to change their behavior

Who are you doing it for?

- Be specific.
 - Who are you creating this for and what are you hoping they do after seeing your data? (go deeper than “community members,” “external audiences”)
- What is their current understanding of what you’re presenting?
 - Say your audience is policymakers in your community...
 - Do they already know about your program? What are their underlying assumptions?
- What action are you hoping they take as a result?
 - This can help you determine which data to use, and the type of messaging to accompany

Data Visualization Resources

- [Storytelling with Data](#) (book + website), Cole Nussbaumer
- [Visual Learning Center](#)
- Stephanie Evergreen, [Evergreen Data](#)
- SHIFT Research Labs—Technical Assistance
- Coming soon: Framing Data Guide

Community Partner Example: FRCA

Moving to Business Intelligence Tools: Applications as an Intermediary

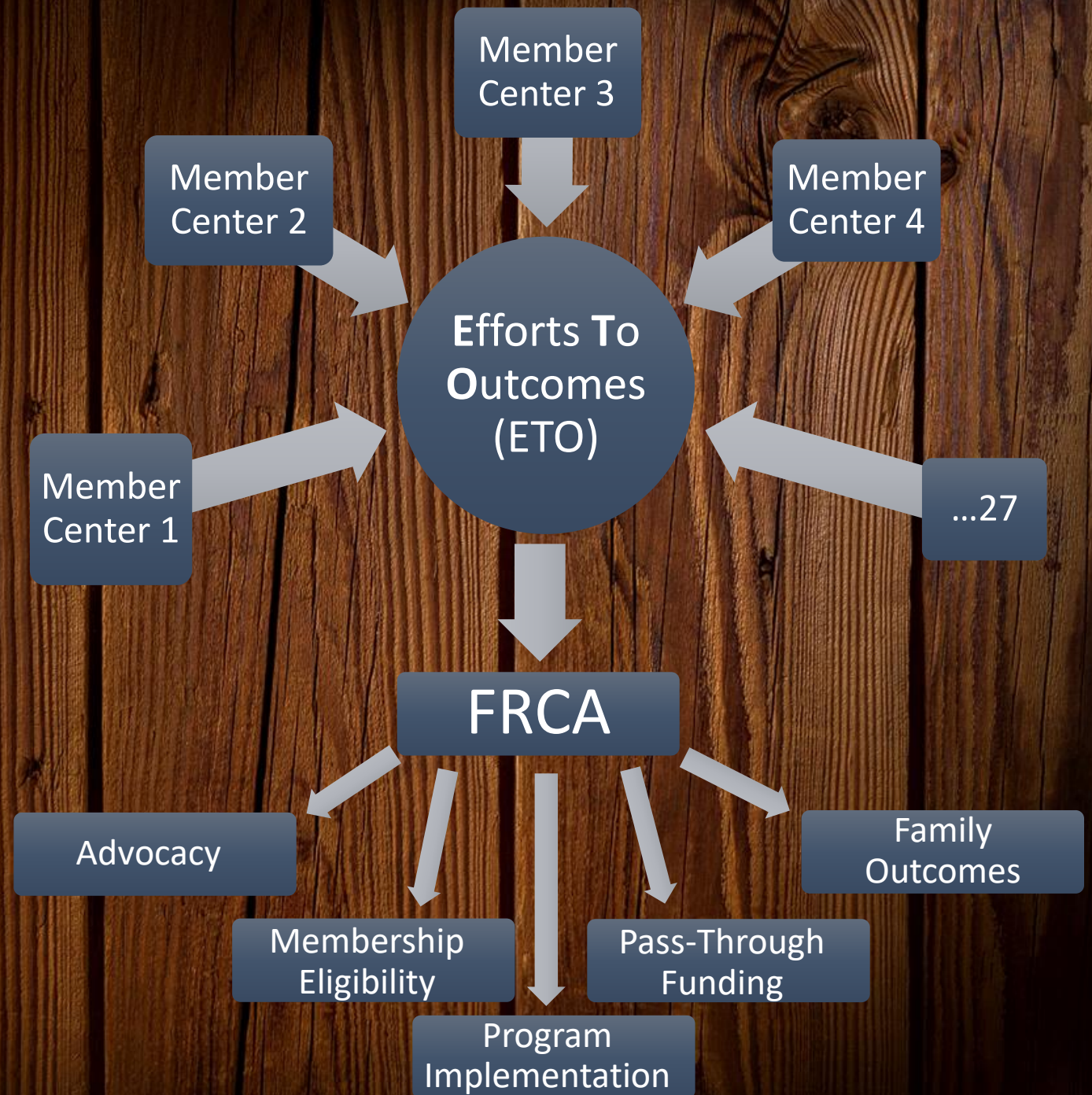
Stuart Sims

Data Context

FRCA Member Centers are providing direct services unique to their communities within a framework of service delivery: “Family Pathways Framework.”

Some general data collection is required and tracked at an individual level

Each Member Center collects data important to its own programs, funding requirements, or interests



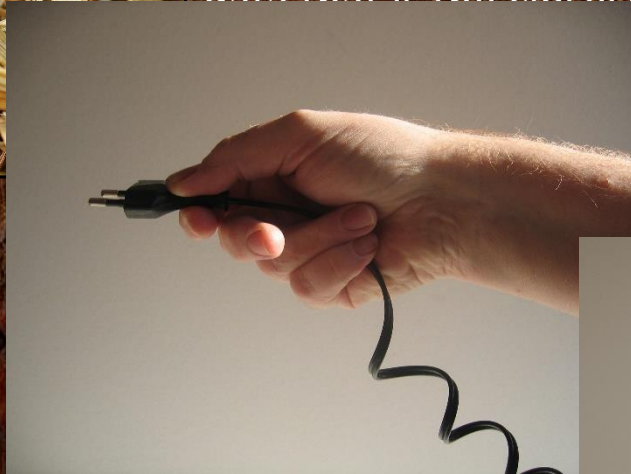
Case Study: Family Strengthening Rating

- Goal: Ensure member centers are meeting the requirements laid out by Colorado Statute
- Co-Create a measurement tool based on the “Family Pathways Framework” and statutory requirements
 - Identify the data points / KPI’s / measurements
 - Source the data
 - On some interval, query the data and generate results
 - Act on results

(Skipping ahead) Approach 1



Using existing reports in the system, find the summarization of the raw data that is the closest to measure



Plug the resulting values into

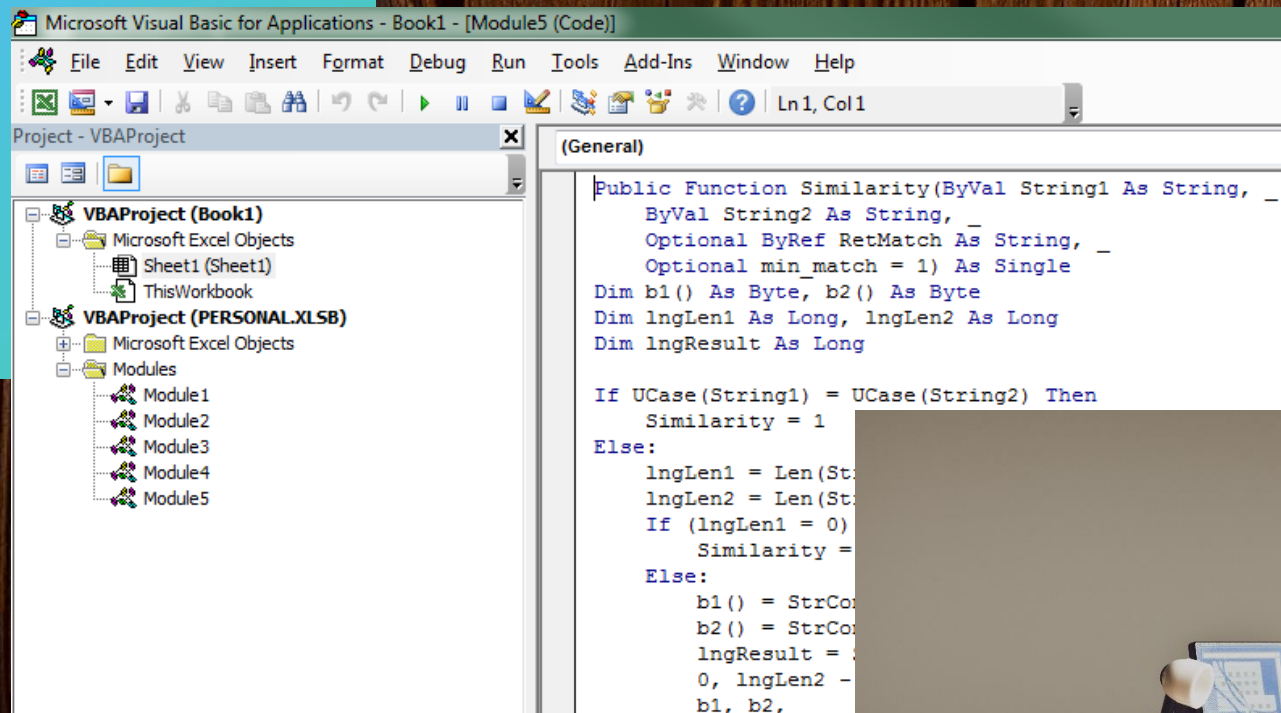


Try to nuance the results because the data sources are not perfectly representative of the measures.

Approach 1

Strengths	Weaknesses
Functional	Time-Intensive (2 full days for querying alone)
	Risk of Data Entry Error (2500+ values moved manually from report to template workbook)
	Difficult to Troubleshoot (No auditing of intermediate data transformation / cleaning steps)
	No control over special circumstances or conditions

Approach 2



script to
the report
files in a

Try to nuance the results
because the data sources are
not perfectly representative
of the measures.

Approach 2

Strengths

Functional

Low Risk of Data Entry Error

Weaknesses

Time-Intensive (1 full day for querying)

Difficult to Troubleshoot (No auditing of intermediate data transformation / cleaning steps)

No control over special circumstances or conditions

Approach 3 & 3.5

1. Better data sourcing

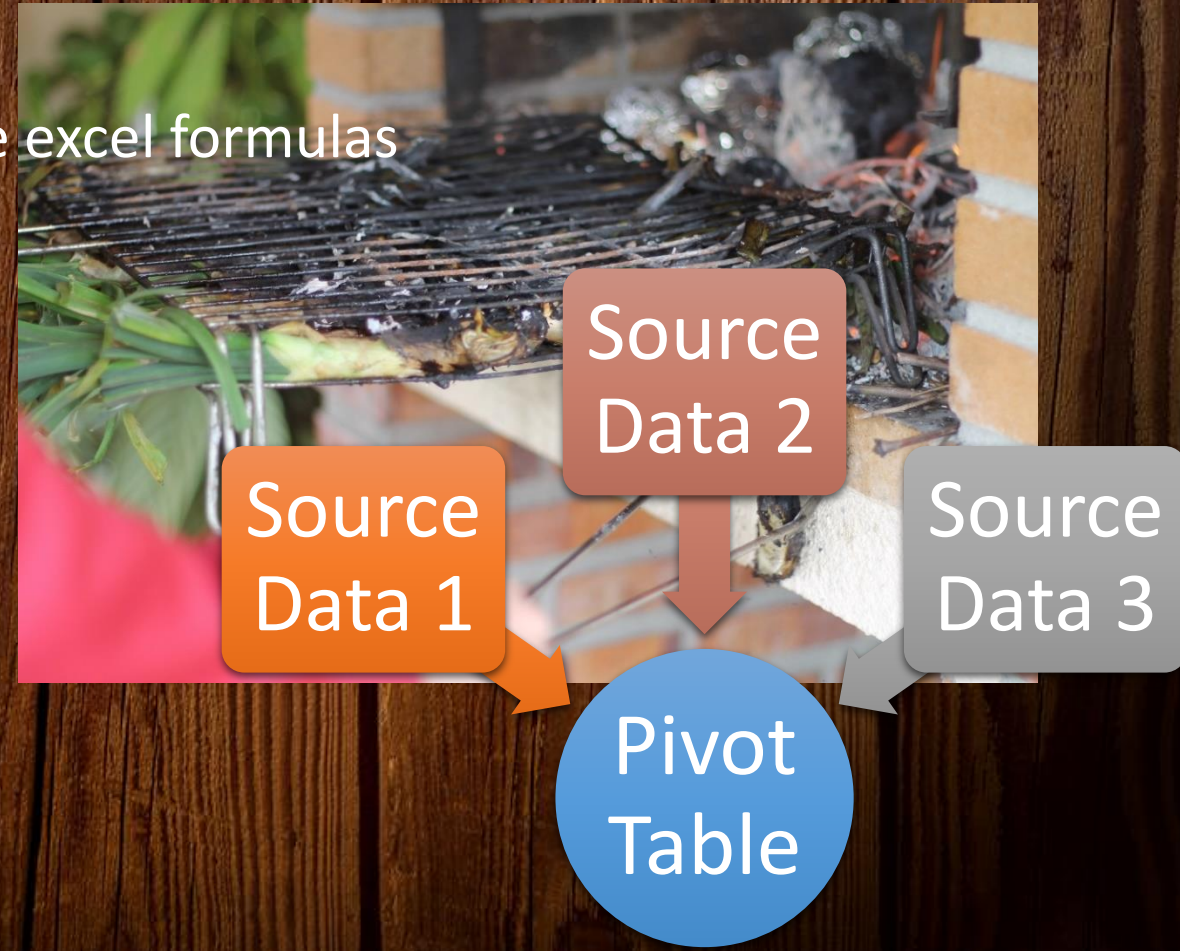
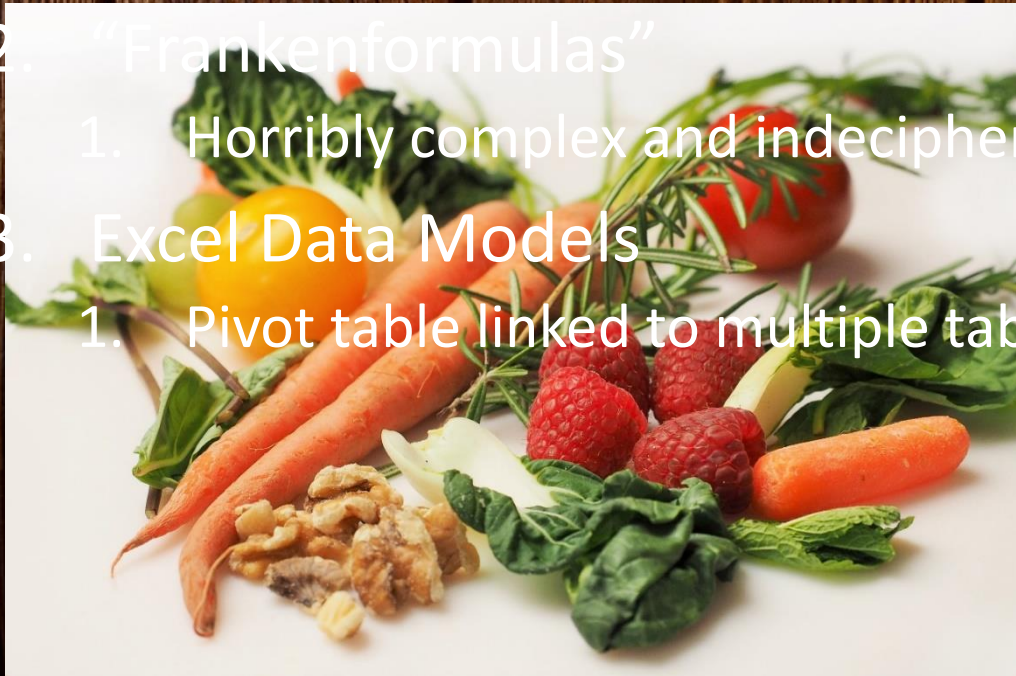
1. Using the raw data instead of an aggregated total

2. “Frankenformulas”

1. Horribly complex and indecipherable excel formulas

3. Excel Data Models

1. Pivot table linked to multiple tables



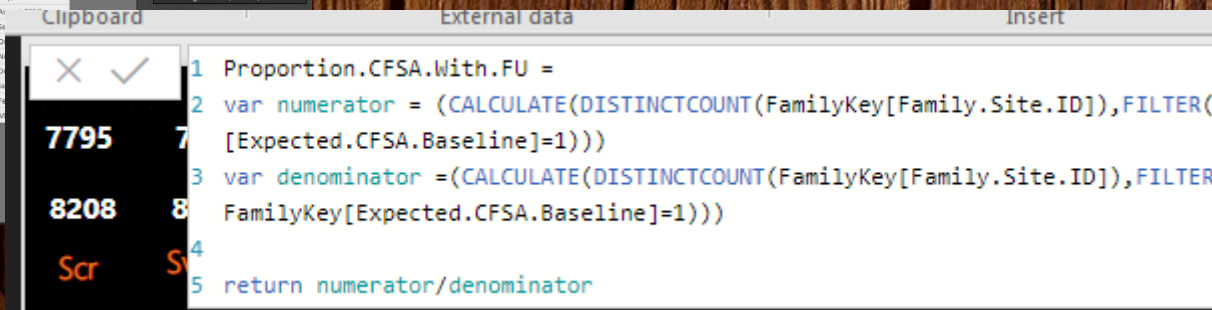
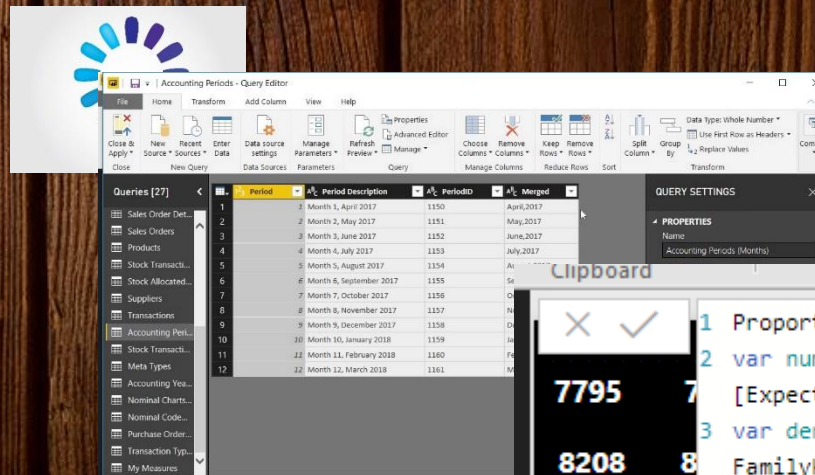
Approach 3

Strengths	Weaknesses
Functional	Lengthy Formulas are hard to interpret
Low Risk of Data Entry Error	Cross-Training
Time Saving (10 reports over 2 hours)	
Audit Every Step of Data Transformation + Formulas	

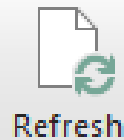
Current Approach

1. Business intelligence tools

1. PowerBI Desktop



Build Measures in BI Environment



Refresh

Refresh it when You add new data

Current Approach

Strengths

Weaknesses

Total Control of ETL Process; Flexible for special cases

Learning Curve for BI Tools

Time Savings – Query to final results in less than an hour

Adaptable for last minute changes

Multi-Purpose (Pass-Through, Program Implementation, Advocacy, Family Strengthening Rating)

Transparent

Pre

[illegible]

2 days to generate, a week to finalize

2500+ values manually moved

No way to audit results

Post

1 hour to generate,
export, and place data
in folders (300,000+
records)

2 minutes to refresh
data model and get
results

Full control and
auditing over every step
of the process

Hypothetical Member Center			
Family Strengthening Rating:		85.67%	FSR Category: High
Data Point	Score	Weight	Accrued FSR Points
Proportion of Families entered into ETO with FRCA Common Screening Data	91.4%	5	4.57
Percentage of families entered into ETO with any Service or any Referral	70.5%	4	2.82
Percentage of families entered into ETO with a referral and referral follow-up indicated	90.5%	3	2.715
	88.5%	5	4.425
Percentage of families with a baseline CFSA 2.0			
Percentage of families with a baseline CFSA 2.0 and a follow-up CFSA 2.0	90.0%	2	1.8
Percentage of families with a baseline CFSA 2.0 and ay follow-up CFSA 2.0 that occurred 31 to 90 days after baseline	75.0%	3	2.25
	85.0%	1	0.85
Percentage of families with a goal			
Percentage of all center staff trained in Standards of Quality	90.0%	1	0.9
Percentage of family development staff trained in Motivational Interviewing	90.0%	1	0.9
Percentage of family development staff trained in Colorado Family Support Assessment 2.0	90.0%	1	0.9
Did center complete both organizational assessments by the stated deadline?	100.0%	1	1
		23.13 of 27 Points	
		85.67%	

Similar Projects at FRCA

Question: How much support are you providing to FRCA Member Centers?

Pre-BI tool: Best
estimation
across a year per
staff person

Composition?

Distribution?

Workload?

Staff	Estimate
1	90
2	1003
3	500
4	620
5	300
6	190
7	56
...	

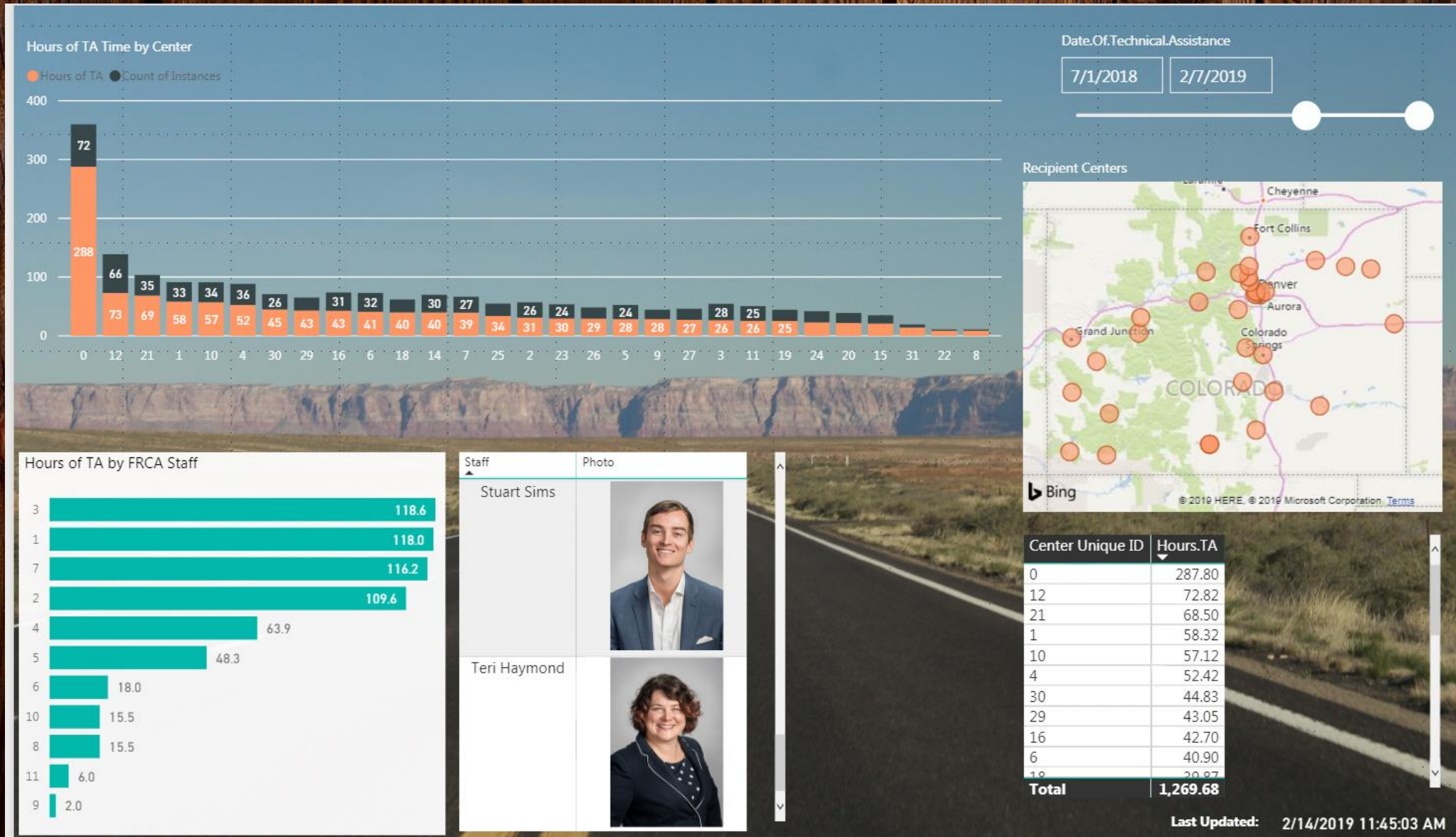
Similar Projects at FRCA

Post BI tools:

Composition of time

Distribution of Time

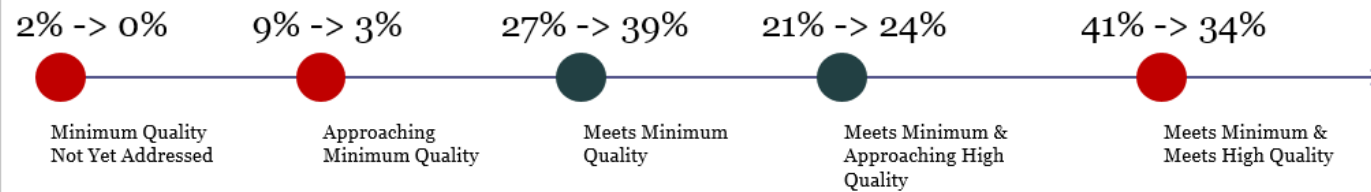
Staff Workload



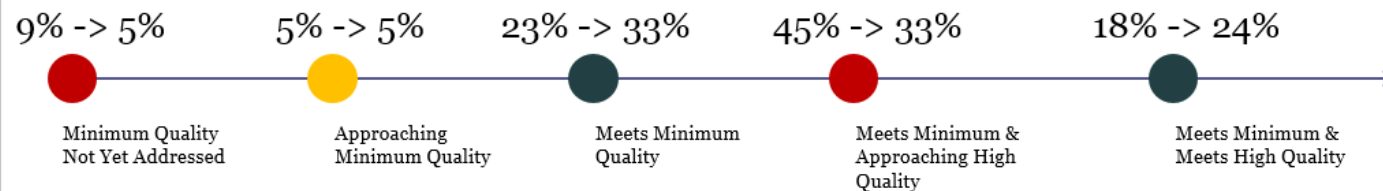
Similar Projects at FRCA

Community Building

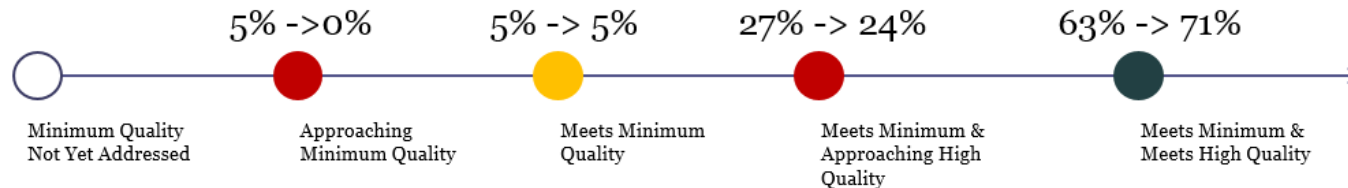
- D.1 Program is involved in, and engages families in, the larger community building process.



- D.2 Program supports the development of community-based leadership.



- D.3 Program builds collaborative relationships with other organizations to strengthen families and communities.



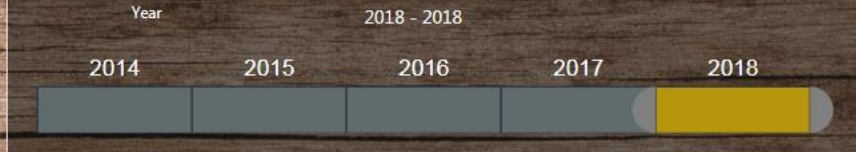
Pre BI tools:
How are self-
assessment
responses
changing year
to year?

Similar Projects at FRCA

Standard CB.3.1: Program builds collaborative relationships with other organizations to strengthen families and communities

Minimum Quality Approaches

High Quality Approaches

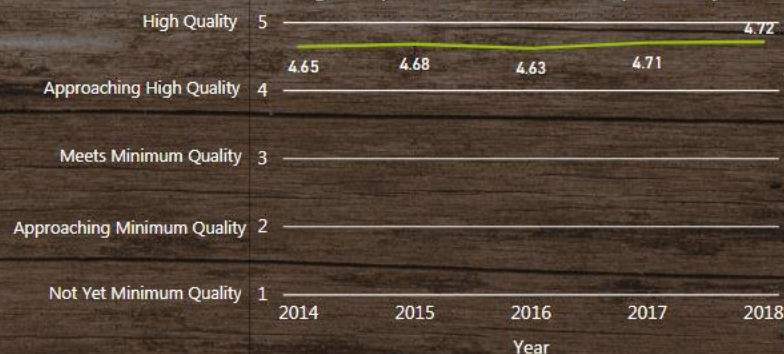


Response Frequency

Mean Score Along the Continuum



Average Response and Count of Responses by Year



Post BI Tools: How are self-assessment responses changing year to year?

Similar Projects at FRCA

Training Evaluations

CFSA
MI

Training Date

8/4/2017

10/19/2018

Overall Impression of Training Content / Space



Regarding the Training Content / Space

The objectives of the training were clearly identified: 4.766

The training objectives were met: 4.834

The time allotted for the training was sufficient: 4.705

The topics covered were relevant to me: 4.747

The content was organized and easy to follow: 4.741

The materials distributed were helpful: 4.762

Participation and Interaction were encouraged: 4.866

The meeting room and facilities were adequate and comfortable: 4.700

Overall Impression of Trainer(s)



Regarding the Trainer(s)

The trainer was knowledgeable about the training topics: 4.872

The trainer was well prepared: 4.863

The trainer was open and responsive to participant questions: 4.911

The trainer was respectful of participants: 4.939

The trainer was accessible for questions: 4.922

Overall Takeaways Eval by Date



Takeaways from Participants

The training experience will be useful in my work: 4.772

I feel that I can accurately use the (CFSA 2.0 tool or MI skills, depending on selection) following this training: 4.635

Training Evaluation
for Regional Trainers

Design Inspiration!

Data Stories Gallery: <https://community.powerbi.com/t5/Data-Stories-Gallery/bd-p/DataStoriesGallery>

DataIsBeautiful: <https://www.reddit.com/r/dataisbeautiful>

Stuart Sims
Data Manager
Family Resource Center Association
ssims@cofamilycenters.org
303 388 1001 x 110

Tableau Overview and Demonstration

Questions and Discussion

- What are initial thoughts? How do you see your organization using Tableau and data visualization?
- What are you desiring more of? How can the ECCP/Data Action Team be supportive?